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13 August 1982

Memorandum for: R.E.H. Challis, Editor,
News and Publications,
Monitoring Service, B.B.C.

From: [redacted] STAT
Chief, London Bureau, FBIS

Subject: FBIS Future Needs at Caversham

Ref: Your Memorandum of 13 July 1982

1. We've addressed ourselves to the questions you raise in your memorandum and append in tabular form an intemization of our present occupancy of floorspace at Caversham together with an estimate of our future requirements. An estimate of power requirements is also included in the table.

2. Most of the additional space we estimate we need is purely to take care of the staff already on board in a slightly more comfortable fashion. As you may be aware, our teletype and editorial establishment has grown over the course of the years but the working space has not.

3. We have left out of the tabulation any consideration of space required in the new cubicles building. We don't really have any idea at this time what will be required for our press facsimile or other satellite monitoring. We think the present space may have to be increased by about one-third but presume this could easily be accommodated by the area left for expansion in the design for the cubicles building.

4. We have not addressed two other areas where we occupy space, as they are outside the main building. One is the emergency operation site in the lodge. At the optimum, we believe we would need approximately double the present sapce, i.e. 10 square meters for editorial operations and 10 square meters for communications. Power required would be approximately 5 kw. The other is the warehouse area, where we have at present 111 square meters, devoted largely to communications paper stores. Assuming no change in communications patterns, this space should be increased by about 25 percent to 140 square meters.

5. Within the main building at Caversham we have at our disposal a 25-pair telephone cable which is adequate for our present needs. To allow for future expansion, particularly if VDU's come into general use, we believe we will need two 20-pair cables.

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6. I believe that the estimates we have given here are generous enough to be safe. We do not see any considerable increase in staff in the planning period you have mentioned.

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Attachment - FBIS Floorspace, Power, and Air Conditioning Requirements

Present Room	Working Occupancy	Present Area (m^2)	Required Area (m^2)	Power	Air Conditioning
Editorial (Rm. 200	6	27.8	41.7	5 kw	Yes
Punching Room (Rm. 201)	7	41	41	5 kw	Yes
Communications Paper Store (Rm.202)	-	3.5	3.5	-	No
Autodin Room (Rm. 203)	2	50.9	50.9	5 kw	Yes
Technical Office and Workshop (Rm. 204)	2	14.6	21.9	2 kw	No
Report Writers (Rm. 214)	2	16.3	16.3	1 kw	No
Common Room (Rm. 215)	1	7.0	10.5	3 kw	No
Tabulators (Rm. 217)	5	25.6	38.4	5 kw	Yes
Bureau Chief (Rm.220A)	1	22.7	22.7	5 kw	No
Deputy Chief (Rm. 220B)	1	10.9	10.9	3 kw	No
Chief Editor (Rm. 221)	1	9.3	18.6	1 kw	No
Administrative Ass't (Rm. 222)	1	9.3	18.6	1 kw	No
Mail Room (Rm. 225)	2	13.8	27.6	2 kw	No

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PMU Editorial (Rm. G123)	4	30.9	46.3	5 kw	Yes
PMU Common Room (Rm. G124)	-	3.2	6.4	3 kw	No
PMU Monitors (Rm. G126)	9	61.6	61.6	5 kw	Yes
PMU Monitors Stores (Rm. G127)	-	5.4	8.1	1 kw	No
PMU Test & Interview (Rm. 128)	1	5.9	11.8	1 kw	No
PMU Monitors (Rm. 129)	9	61.6	81.9	5 kw	Yes
Additional Rooms Desired					
Communications Superv.	2	-	10.8	1 kw	No
Chief, PMU	1	-	10.8	1 kw	No
TV Monitoring	1	-	10.8	2 kw	No
PMU Reference Room	-	-	13.4	1 kw	No

Total present floorspace 421.3 sqare meters

Future required floorspace 584.5 square meters

Future required power 63 kw

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A COMPUTER SYSTEM FOR THE MONITORING SERVICE

Report by: [redacted] STAT

February, 1982

INTRODUCTION

This is a general description of the computer system which we propose for the Monitoring Service.

It is not as closely defined as we would have liked, because it has been produced five weeks earlier than was originally planned. However, it does contain as much detail as we can legitimately include at present.

The real detail of how each operation is performed can be filled in during the months ahead, and more particularly during the design discussions with the manufacturer or supplier of the System who is eventually chosen.

What the System would do

The System here proposed would almost entirely eliminate the manual distribution of paper in the Monitoring Service. It would also do away with much of the paper itself. It would store and list all source material, accelerate the processing and store and list the edited material too. This material would be delivered more quickly to customers and to printers. The System would take over virtually all the routine functions of sorting and numbering, and make all material almost instantly available to everyone with access to a VDU. It would shorten the printing process, automatically time and identify recorded tapes, tune the receivers for radio and RT transmissions and provide fast, two-way communication with points outside Caversham.

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Some primary facts about the proposed System

1. It will need to be a big system -- not so much in respect of the number of terminals, but in terms of the very large storage capacity and processing power required to handle the volumes of material and the functions we are proposing for it.

2. The current normal speed for a distribution system is 1200 baud, which in simple terms means that it accepts, displays and distributes material at 150 characters per second. This is the speed of the EDS at Bush House. We do not feel that this is fast enough for Monitoring Service. In some of the applications described in this report, the waiting time for an item to write itself on the screen would be unacceptably long at 1200 baud. We believe that the Monitoring Service System should be capable of operating at 9600 baud or more. That is at least eight times as fast as the EDS. At this speed, an item fills a screen almost instantaneously to the eye. Printers, however, should work at 1200 baud. Anything faster would involve using line printers. These are not only very noisy and very expensive, but they produce copies which are not easy to read.

3. There are two basic philosophies on systems of this kind. One is to use the central processor mainly as a switching system and to build the sophisticated word processing into intelligent VDUs. This is how the original planning for the EDS began, but it soon developed beyond that. The other way is to use dumb VDUs and take the sophistication back to the processor. This is how Reuter's system is designed. For Monitoring Service, we are proposing a combination which is an extension of the way the EDS works. The VDUs would be intelligent, with editing facilities at least as advanced as those on the new VDUs currently on order for the EDS, and they would have split screens to allow two simultaneous transactions. But because of the length of some of the items which have to be processed, or even simply looked at, in Caversham, it would be necessary for the computer itself to carry out some of the functions normally performed off-line by VDUs. This necessarily means that a VDU would often need exclusive use of one of the processor's ports; therefore the number of ports would need to be large in relation to the size of the System.

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THE SOURCES OF MATERIAL

Of the three main sources of raw material which come into Monitoring Service, we are in control of two: the Listening Room and the RT Section. The third - FBIS - is beyond our control, but, given co-operation, can work efficiently with our System.

Before discussing detailed working in the Listening Room and the RT Section, we feel we should draw attention to the possibility of a fundamental change which would have wide staffing, and therefore union, implications.

We have read the reports of the Listening Room Modernisation Committee, and we agree that monitors should be able to select frequencies by simple push-button controls. However, we would go a step further.

To take the Listening Room first: it would be a simple matter to store the various transmission schedules in a computer, putting the frequencies in the presumed order of preference. These lists could be changed or updated at any time.

The computer would recognise from these schedules when each transmission was due. Just before the time of a transmission, the computer would take remote control of a receiver at Crowsley Park, instruct it to tune to the most favoured frequency, select the most appropriate aerials and filters and feed that frequency to the first button on the monitor's desk. If the signal were not good enough, or if it faded during the transmission, the monitor would push another button. The computer would then select the second frequency and go through the same process. This could be repeated throughout the range of available frequencies, and each change would take a fraction of a second. The monitor could change frequencies as often as he wished. Each monitoring position would need at least six buttons, and would have facilities for pre-listening.

The procedure for RT transmissions would be the same, except that the buttons would be pushed by the operations assistant, or possibly even by the clerks.

Although this may seem a radical idea, it is well within present technology, and it seems an obvious way of gaining advantage from that technology in the mid-'eighties.

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Since the computer had supplied the signal to the monitor, it would, of course, know what he was listening to. So as soon as he pushed his first button, an LCD display in front of him would show the source and the date, the continuous time, the frequency and the button that he had pressed.

Station →	TRIPOLI HOME	ARABIC	← Language
Date →	20-01-82	13:34:09	← Time
Frequency →	15270	2	← Channel

Each time the monitor pushed a button to change channels, the LCD display would show the new frequency and channel number.

The computer would also record the same information (except for the channel number) in digital form, and this would be recorded continuously on one track of the cassette tape. When the cassette was played back, either in the Listening Room or a cubicle, the same information would be shown on the LCD display.

This system would enable monitors, singly or in teams, to locate starting points quickly, since it would show the precise time at which each word was recorded. It would also enable foolproof identification of stored cassettes.

Routine monitoring

A monitor would, of course, be able to use his VDU for any purpose allowed by the System. When he wanted to transcribe, either in the Listening Room or a cubicle, he would press a "Transcribe" key and a pro forma would immediately appear on his screen. This would provide spaces, with automatic tabbing, for him to fill in his name, the source of the transmission and the time. The System would assume that every transcript would have automatic delivery at certain points, such as News Bureau, FBIS and the appropriate SWB sections and monitoring teams. The pro forma would provide space for him to add any additional people whom he thought might need a copy.

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It might well happen that a monitor did not decide that an additional person should receive a copy until he was part-way through a transcript. In such a case, he could go back to the heading information and fill it in. But in any event, the System would not let him enter an item until he had supplied the necessary information — even if negative. When the transcript was finished, the monitor would press a transmit key; the System would accept the item, carry out the automatic deliveries and add the item to the appropriate list.

Flashes

The procedure here would be the same, except that, at the end of the transcript, the monitor would press a "flash" key instead of the regular transmit key. The System would automatically print "FLASH.....FLASH.....FLASH" at the top of the page, give it priority treatment in automatic delivery, and list it.

The Alert Facility

One of the problems we considered was the urgent item, when the News Bureau is waiting desperately and the monitor is going as fast as he can. Some tensions arise when the News Bureau feels that the monitor needs prodding and the monitor feels he could get on with it faster if only people would leave him alone.

The monitor's VDU would have an "Alert" key. He could activate this on his own initiative or by request from the News Bureau or the Listening Room Supervisor. The effect would be that both the Duty Editor and the Listening Room Supervisor would see, on whichever part of their screen was available, the item as the monitor was typing it out. There would be audible warnings on the two VDUs. At any time, either of the two recipients could cancel, if they thought the item was not worth the alert, or the monitor himself could cancel if it turned out not to be as good as he originally thought — in which case the two recipients would get an "Alert Cancelled" message.

Multi-page items

Individual monitors or teams of monitors would be able to enter multi-page items in segments; the System would store them and collate them in the correct order. Pages flashed out of turn could be transmitted to users immediately, but would also retain their correct position in the final collation. This would necessitate an exclusive area of store for the Listening Room.

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Monitors under training

The same exclusive area of store would be available to the Listening Room so that, if desired, the work of monitors under training could be checked and/or amended by senior monitors before being released into the System.

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THE RT SECTION

If the format and length of RT material were under our own control, it could probably go direct to users. But this is not so; some human processing is still necessary. Therefore, we recommend that the RT Section should remain responsible for the dissemination of this material throughout the building, but by different methods.

English-language material would be processed by the RT Section. Each item coming in the building would be lodged in a temporary store, and the System would present them on VDU screens to the clerks. This would be mostly in chronological order, but variable priorities would be available. The clerk would approve the material as fit to be circulated or would make necessary changes — mostly degarbling — helped by semi-automatic facilities in the System.

Foreign-language material would no longer be printed in the RT Section, but only on teleprinters closely associated with the appropriate monitors in an enlarged Listening Room. No foreign-language material would be entered into the System, since it is of no use to anyone until it has been processed by monitors.

The proposed method

Following on from the proposed automatic method in the Listening Room, a similar method could be available to the RT Section. The System would be programmed with the times and favoured frequencies of all transmissions and would automatically set up the receivers at Crowsley Park. The operator would be provided with push-buttons or a VDU to change frequencies when necessary and if possible. The System would select both the teleprinter and its own input channel for each agency.

Alternatively, the operator could prepare for a transmission in the same way as he does at present. He would set up a printer for an agency, but in addition would tell the System which agency was to be on which of its input channels.

With either method, the System would recognise the varying start and finish codes of the agencies and would know where to send automatic prints. Either method would allow for a system of priorities, which could be varied from day to day, or from transmission to transmission, according to the news of the day. This would be done by the operator, on the instructions of the News Bureau.

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The System would then present the items on VDUs for the clerks to process. The name of the agency, the serial number, the date and the time would be automatically displayed, thus removing the need for this information to be typed manually on each page.

It should be understood here that the process of making an item available on a screen cannot begin until the moment at which the slow-speed teleprinter line has finished sending the item. To display the item on a screen at 1200 baud would impose, we believe, an actual and psychologically unacceptable delay, particularly when in the majority of cases there is little for the clerk to do. She would have to watch it write itself on the screen, perhaps push one key and then watch it write itself into the System. And although the overall time of processing and delivery to users would be shorter, this particular stage would be seen to be slower. This is one of our reasons for recommending that the System should operate at 9600 baud. At that speed the visual effect is of an entire item appearing on the screen almost instananeously.

As items were completed, they would be shared among however many VDUs were in operation. At times when several agencies were transmitting simultaneously, they would form a queue, and the next item would be sent to the first available VDU. They would queue according to the priority assigned to each agency (on a scale of, say, 1 to 5) but the System would be programmed to ensure that an item of low priority did not get unduly delayed. A clerk faced with a "difficult" item could put it back in the queue so as not to delay other material, but the queuing system would ensure that it was re-presented at regular intervals.

As for the actual processing by the clerks, in the great majority of cases this would be simply a matter of the clerk's checking that the item appeared to be a valid piece of text and pressing a key to release it into the System. If the text were garbled by some passages having slipped into figure shift, the clerk would be able to ask the System to correct these passages, using a simple command and markers. It is also possible that, under certain circumstances, the System would be able to correct more serious garbling, but this needs further investigation.

The System would also be programmed to alert the clerks and/or the operator if a transmission were affected by bad reception or if items appeared to be excessively long or were wrongly separated, which could be caused by corrupted start and finish codes.

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The clerks would also be able to reject teleprinter idling, service messages, foreign-language text mixed in with the English, and items so hopelessly garbled as to be useless. With split-screen VDUs, they would be able to compare items from different transmissions and reject repeats.

When the material was entered into the System, it would be automatically cleared from the temporary store. It would automatically print out the items for various users and would compile lists, agency by agency, of the items entered into it. This would enable users to check back and retrieve items of interest on their VDUs, with dropped hard copies when required.

We also recommend a "tuning in" facility, somewhat similar to the "alert" system described for the Listening Room. Users who were anxiously awaiting news from a particular agency would be able to request the output of an RT transmission and see it on their screens as it was being sent over the wire. They could also make such a request in advance, and the System would send it to them, when available, on the unused portion of their split screens. This function of the System would, of course, have to be at slow teleprinter speed.

There remains the question of flashing from the RT Section. At present, although it is no part of their jobs, the clerks sometimes alert the News Bureau when they see a story of obvious importance. The "flash" key, as described earlier, would be on all VDUs, but it is our view that this key should be operative only on the monitors' VDUs. This would be by an inhibition at the processor, which would not accept flash commands from other VDUs. However, it may be felt that the RT Section clerks should also have use of the flash facility, so as not to discourage their initiative. On the other hand, the provision of the flash facility might make them believe they were <u>expected</u> to use it. This, we feel, is a Monitoring Service policy decision.

As well as going into the System, we believe that RT material should continue to be received on teleprinters. This is for three reasons:

1. As a hard-copy back-up in the event of a breakdown in the System;

2. As a back-up against human error, so that a hard copy is available in case the System fails to recognise garbled

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or erroneous identifications, or a clerk accidentally discards a wanted item.

3. Skilled operators can often detect a corrupted transmission or wandering from frequency simply by a change in the sound of a teleprinter. This is a useful safeguard, although it is possible that the System software could make this skill unecessary.

However, it should be possible to make some reduction in the number of teleprinters required, particularly if the System itself is controlling the receivers and channels.

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COPYTASTING

The preliminary report of the Modernisation Committee mentioned this problem, which is one of too much material flooding into the building and putting pressure on, particularly, the News Bureau. There was a desire for someone to do rough copytasting of incoming material.

We have thought very carefully about this and we are forced to confess that we cannot find a solution -- only objections to the suggestions which have been made.

Monitors: During our inquiries, it was put to us that monitors in the Listening Room should have first sight of all RT material and copytaste it as, in effect, they do their own material. We did not feel that this work should be loaded on to monitors. They have enough to do already, and it would create a bottleneck. Our view was upheld at a recent meeting of the Modernisation Committee.

Journalists: A journalist would, of course, be qualified to copytaste. To be of any use, he would have to be placed between the raw material on the one hand and the News Bureau and SWBs on the other. On the basis of two day shifts, it would mean four additional posts. If it were likely that he would be able to weed out a large proportion of the material, it might be worth considering, but we do not feel that this is so. In any case, this, too, would create a bottleneck.

Service Operator: The Service Operator would have other functions in the System, and we do not believe that he or she could also take on the copytasting function. Even if it were rough copytasting, it would still mean that every item had at least to be glanced at. Again there would be a bottleneck, and this time controlled by someone who was not journalistically qualified.

RT: It might be possible to instruct RT clerks to discard obvious dross (Czechoslovak water polo results spring to mind). But again we would be asking unqualified people to make a journalistic judgment, and there would always be the danger of a significant piece of information lurking somewhere within an apparently useless item.

So we regret that we cannot offer any suggestions at present, although of course it can be looked at again when there is more time.

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THE OUTPUT SECTIONS

Before going into any detail about the work of the News Bureau and the Editorial Sections, we feel there is one general point which needs to be mentioned.

Throughout the preliminary discussions on an electronic system for the Monitoring Service, there has been the thought of a totally electronic system in which monitors and journalists would work entirely on VDU screens and have little to do with paper.

We have examined the working methods of various sections; and while we think that all-electronic methods would be very useful to monitors, we believe that the journalists in the News Bureau might sometimes need to edit on hard copy, and certainly those in the SWB sections can, in many instances, work very much faster on paper than they would be able to do on VDUs.

There is also the question of union attitudes; and although this is not strictly part of our terms of reference, it would be remiss of us not to consider it, particularly in the light of experiences at Bush House. The attitude of unions, particularly in the News Bureau, may well have a strong bearing on the type of system which is eventually installed.

Therefore, we have described various plans for the News Bureau, which would depend on how far the unions were prepared to co-operate, and one plan for the SWB sections, because we think it is by far the most sensible method.

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THE NEWS BUREAU

We are offering three main options for the work of the News Bureau, plus a modified version of the first option.

Option 1 — All Electronic

This would involve the members of the News Bureau working entirely on screens. Each one would prepare his story by editing down the raw material (monitors' transcripts, RT or FBIS). A split screen would enable him to work on a story and simultaneously to call up ancilliary information needed for its preparation.

When his story was finished, he would transmit it to the Duty Editor's VDU at the "instantaneous" speed of 9600 baud. If the Duty Editor approved the story, he would simply mark it for A or B distribution and transmit it, and the System would automatically number it and send it on the wire.

If the Duty Editor was working on a story of his own when a sub-editor's story was ready to be looked at, an indicator would appear on the other half of the Duty Editor's screen. He would then have a choice: carry on with his own story and get to the sub-editor's later, or break off from his own story and clear the sub-editor's first.

If the Duty Editor did not like the story, he could amend it himself or send it back to the sub-editor's screen for amendment or rewrite. But whatever choices were made, when the story was approved it would go straight out on the wires without benefit of operator.

But how does the material get to the journalists in the first place? Here we face problems both technical and human.

Under the present system, material is simply delivered to two trays, one for flashes, the other for routine material. On some shifts the Duty Editor sees everything that comes in and distributes the work to the others. On other shifts, whoever is available takes the next item. There is no copytaster as such.

With a totally-electronic system, each item would appear first on the Duty Editor's screen (flash material would have automatic priority). The Duty Editor would scan it — often not reading more than the first few lines — then decide whether to do it himself, give it to someone else or discard it.

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The Duty Editor could switch this first screening function to another VDU when he was going to be absent from his desk.

The advantages of this method would be that the Duty Editor would see all incoming raw material, that it would almost entirely eliminate the use of paper, and that the material would get to the desk more quickly as a 9600 baud display than as a 1200 baud printout.

The disadvantages are that the Duty Editor would tend to be tied to his VDU, having to see all incoming and outgoing material and, in effect, becoming the copytaster; and that he might not have time to write stories himself or, at the very least, would be constantly interrupted while doing so. It may be said that this is no more than some duty editors do at present, but the psychological effect of being a slave to the never-ending demands of the VDU might be somewhat overwhelming. In this context, it is worth noting that, according to our researches, only about three per cent of all available material, in terms of volume, is used by the News Bureau.

There is also what we have termed the modified all-electronic system -- a contradiction in terms perhaps, but a reasonable description nonetheless. Under this system, all raw material would be printed out on 1200 baud printers close to the news desk. This would include Reuter, Tass, NCNA, etc. Another printer would be reserved for flash material and requested printouts. This preserves the flexibility of working as currently practised by different shifts.

Those writing the stories would call up the raw material from the System, edit it on screen and, as already described, send it to the Duty Editor's VDU for his approval. At the same time they would hand back the raw material so that the Duty Editor had something with which to check.

Sometimes the journalists rewrite entirely because the raw material is not suitable for editing down. This method would be preserved, except that they would type their stories on VDUs instead of typewriters. The rest of the operation would be as described above.

There would, of course, need to be a separate store for stories awaiting approval.

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Option 2 -- All Paper

This assumes that no agreement can be reached with the unions to allow direct input or editing by journalists. It leaves their present working methods basically unchanged.

The material would reach them in hard copy, delivered from the 1200 baud printers. They would continue to edit on hard copy (and presumably do rewrites on typewriters) and their copy would go by hand, as now, to the operators.

This would shift the electronics to a later stage. The operators would have the choice of calling up raw material on their VDUs and editing it in accordance with the draft from the News Bureau, or retyping it if the editing looked too complicated. Then they would send it out on the wire.

So the only differences from present methods would be that the raw material reached the News Bureau rather earlier than at present, and that there would be a saving of time at the output end because, in most cases, the material would not have to be retyped.

Option 3 -- Half and Half

The assumption here is that NUJ members are prepared to edit on VDUs, but that neither the NUJ nor the ABS is willing to let them transmit items on to the wires.

In such an eventuality, the first part of the operation would be as described in Option 1. However, at the point at which the Duty Editor was satisfied with the story, he would not transmit it direct to the wires, but would instead send it to the operators' VDUs. There would be a system of queuing and priorities so that the operators received the material in the right order. It would be the operators who would transmit the material on the wires.

Conclusion

No one knows at present how the unions will react or what kind of agreement can eventually be reached. However, from the practical point of view, we favour the modified version of Option 1 -- the almost all-electronic method.

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THE EDITORIAL SECTIONS

Our preferred method for the editorial sections is that they should have all the facilities of the System, but that they should stay with hard copy for most of their editing.

It would, of course, be technically possible for the raw material to appear on screens in the SWB areas and for the journalists to edit on screens and mark up the edited versions for typesetting, thus eliminating the input typists. In theory, this would save time.

However, there are factors which militate against such a method. In watching the editorial sections at work, we have noticed that much of the editing consists of, in effect, reissuing pages of raw material with minor amendments. These include marking for capital letters, changing or clarifying punctuation, changing the order of words when a monitor has used unidiomatic English and, in the case of FBIS material, changing American to English spellings. We are convinced that an editor can do this kind of work very much faster with a pencil than with a VDU. There might be a very marginal overall saving of time by having the material handled from receipt through to printing by one person, but the actual editing process would take longer; and an electronic system which actually slowed down the editorial staff would be counter-productive.

Also, although the System would be designed to change type faces, sizes and styles and to justify the lines, human intervention would still be necessary to clean it up; for instance by changing the point at which words are broken by hyphens at the end of lines. We doubt whether the editors in the SWB sections have time to do this fiddling work; and in any case, it would mean shifting this function from clerically- or operationally-graded staff to MP staff.

However, we do feel that members of the editorial sections should be given choice and flexibility. Some may prefer to edit on screens for shorter items, and it should be an advantage to those producing the Weekly Economic Reviews, where most material is written rather than edited down.

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So we see the working of the SWB sections as similar to the present methods. From their point of view, the main advantage would be that the System would automatically deliver the material they need; there would be no more waiting for collection or hand delivery. This might mean that it was possible to get later material into current editions.

The real time saving for SWBs should be in the composing of the offset plates, or their equivalent. This might well enable editorial deadlines to be later than at present.

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THE PRINTING OPERATION

The principal saving in the composing area would be that most material would no longer have to be retyped, as it is at present.

The input typists, or operators, would receive edited copy from the editorial sections, as now. But instead of retyping the whole item on a composing typewriter, they would call up the raw material from the System and edit it in accordance with editorial instructions.

Monitors' transcripts will be in upper and lower case, RT in upper case only. From what we have learned from FBIS, it appears that their material is already available in upper and lower case, but is converted into all caps for their teleprinters here; with a direct feed into our System, it should be possible to strip off their conversion and get their material in upper and lower case.

In any event, the System could allow for this. With an all-caps item, the operator would press a single key to reset it all in lower case — except that it would automatically put a capital after every full stop. So for the capitalisation part of the editing, she would type over any remaining letters that needed to be in caps. This would be much faster than knocking down everything else to lower case, which would be tantamount to retyping.

The System would be programmed to recognise typesetting instructions and it would automatically produce the offset master, probably using a daisy-wheel printer of the kind normally associated with word processors. It would allow a greater range of type faces and sizes than is available on the present IBM composing typewriters, and there would be no need to keep changing the golf-ball printing heads.

We have reluctantly rejected having automatic delivery of finished material to the proofreaders, because they would have to compare it with the edited copy, and that would have to go by hand. However, since the operation of VDUs would be much quieter than that of the IBM typewriters, it should be possible to have the proofreaders in the same room, perhaps behind glazed partition walls.

We feel that, for the foreseeable future, offset litho is likely to be the preferred method of printing. We do not feel there is any other reprographic method better suited to the number of pages and lengths of print runs.

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LINKS WITH FBIS

Ideally, the System would treat FBIS as though it were simply another section of the Monitoring Service. After all, the work of the FBIS bureau is similar insofar as it takes in raw material and puts out edited material. However, it is not yet certain how active a part FBIS would wish to play in the System. Although the present Bureau Chief seems to view it favourably, final decisions will obviously have to be made in Washington. Ed.N.P.M.S. may get some firmer indications during his visit there. Meanwhile, these are the possibilities:

BBC material to FBIS

There are three possible ways of supplying material to FBIS.

1. We have an extra printer receiving monitors' transcripts and RT, and simply send copies up the Lamson tubes, as now. This primitive method assumes total lack of interest by FBIS.

2. FBIS takes the service on a wire to the second floor and hooks whatever equipment it prefers on to it. This assumes that FBIS's interest is only in getting paper copies faster than now. Basically, it makes no difference to the System.

3. If FBIS is interested, it could have a full service. It would have VDUs and printers from our System. It could choose whether to work on hard copy or to edit on screens. It could have any kind of automatic delivery it wanted. It could interrogate the System, using all its files and lists, and — although it is hardly likely to want to do so — it could interrogate the EDS.

Whatever FBIS chooses to do, the System would be able to handle it. If FBIS wanted full use, it would mean additional ports, channels, software and storage capacity in the System, but nothing more difficult than providing the facilities for any section of Monitoring Service.

There might be some problems of interface if FBIS wanted to join in but insisted on using different hardware for compatibility with any new system that it might be planning. However, we do not think these problems would be insoluble.

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FBIS material to BBC

Here we have a different story. It is vital to the success of an electronic system in Caversham that FBIS should be prepared to supply its material in electronic form.

At present, the FBIS system prints out its material on teleprinters of only moderate speed. Those which are marked for the BBC are put into a Lamson tube; those that are not are witheld. Monitoring Service would need the equivalent function to be performed automatically, which could be done by FBIS themselves or by a bolt-on box on the Caversham System. This would enable them to preserve their security.

If FBIS is willing to co-operate, all well and good. The material would feed into the Caversham System just like monitors' transcripts and RT material. The System would strip off unnecessary header codes.

But if FBIS will not co-operate — if it wants to continue tearing paper off teleprinters and putting it into a Lamson tube — then this would cause serious problems. Something like 45% of all raw material comes from FBIS; and the result of keeping to hard copy delivery would be to render impossible many of the facilities which we are describing. The raw material could not be stored, listed or retrieved. There could be no editing on screens of FBIS material. The savings which we envisage by not having to retype edited material would be reduced by about half. A very large part of the general conception of the Caversham System would collapse.

Therefore, it is of vital importance to convince FBIS that it should play a full part in the System — not so much in their reception of Monitoring Service material, which doesn't really matter, but in their method of delivery to Monitoring Service, which matters a great deal.

Equipment

The FBIS Bureau Chief believes the bureau will still want Reuter and Tass English on teleprinters. No problem.

He also believes that, if they work fully with the System, they will need 16 VDUs and 2 1200 baud printers. The estimate on VDUs agrees precisely with ours, but we think he has under-estimated on printers; we are recommending four.

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RETENTION, LONG-TERM STORAGE, INDEXES AND LISTS

One of the advantages of a computer system is that it allows material to be stored for a period, thus providing fast retrieval of recent information. The system we are proposing would catalogue every item of input and output by a series of automatically-compiled lists. However, the storing and retrieval of material demands capacity and hardware, which can be extremely expensive; therefore, limits must be set.

At a meeting on February 9th, 1982, the Caversham Modernisation Committee agreed the following:

Raw material (monitors' transcripts, RT and FBIS) would be kept on line in the System for 14 days. They would then be kept on microfiche. The fiches could be kept indefinitely, but the feeling was that they should be discarded after six months.

News Bureau material would be on line in the System for one week, then overwritten.

Reuter output would stay in the System for two days, then be overwritten.

SWBs would stay on line for 14 days (12 days' editions). They would then go on to microfiche and be kept indefinitely.

LISTS

In all cases, the lists of items would stay on line for the same period as the categories of material to which they referred. The lists of raw material would also go on to microfiche, but there would be no need to put the SWB lists on fiche because they would be basically the same as the contents pages.

Generally, monitors' transcripts would be listed under language teams, RT by agency, FBIS by outstation and SWB by parts. But it would also be possible to have variations: transcripts by name of station or name of monitor, FBIS by name of radio station, etc.

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The lists would contain the following information for each item:

A and B Wires: Serial number, date, time, headline.

Monitors' transcripts: Serial number, date, time, source, name(s) of monitor(s), language and headline supplied by monitor.

RT English: Serial number, date, time, agency, headline (extracted from RT message).

FBIS: Serial number, date, time, source, headline.

SWB: Serial number, date, headline (and key words?)

MICROFICHE

For microfiche, we recommend a system similar to that used by the EDS at Bush House. Each midnight the System would look back over the material of the previous 24 hours and copy that which needed to be kept on to a magnetic tape. This would be sent next morning to a COM (computer-originated microform) bureau, and the microfiches should be returned in three or four days -- well before the material in the System was overwritten. This is a comparatively cheap operation; and if there is no suitable bureau in the Reading area, the COM tape could probably be sent daily to Bush House and processed with theirs.

There would have to be separate fiches for raw material and SWBs because of the different periods of storage. Also, it would be advisable to have the SWB fiches in duplicate: one set for taking copies, which might get scratched, and one set for permanent store in fireproof cabinets.

INDEXING

We have considered the possibility of a complete indexing system by random word search and have reached the conclusion, without much difficulty, that this would be prohibitively expensive.

However, it would be possible to provide a simpler key-word index for SWBs. Each item would be indexed by the editorial staff during editing. They would use a maximum of four words from a list of key words which they could create for themselves. For simplicity of indexing, the number of key words should be restricted to, say, 4,000 words shared among the four sections.

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The process can be illustrated by considering a recent item headlined "Confusion over Taiwan Softball Invitation to China." Possible key words could be 'China', 'Taiwan' and 'Sport'. These key words would not necessarily have to be in the headline, or even in the item; they would be generic words chosen by the editorial staff, used only to classify the item.

A subsequent search specifying the three key words would retrieve a listing of this item and all other items which had been classified under all three of the key words. A search involving only two of the three key words, such as 'Taiwan' and 'Sport', would result in a listing of this item, but the list would also include items about sport involving Taiwan and countries other than China.

Such a simple form of indexing is unlikely to produce a unique identification of an item every time because the same key words may have been used for several items. The user would have to examine the display of items to find the particular item he wanted.

On balance, we recommend that such a system should be adopted. However, it must be said that it might well be expensive in terms of data storage and programming effort. A decision would have to based on the balance between the cost and the value of such a system to the Monitoring Service. This, we feel, is something which needs further investigation.

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Permanent store

There is a fundamental difference in the philosophy of corrections between a news-based computer system, such as the EDS, and the average bank/insurance company/gas board computer. In the latter type of system, any stored material which is wrong can be called up, corrected and put back into the system, and the erroneous material simply vanishes. The EDS, for instance, is designed to prevent this. An inaccurate story can, of course, be called up and changed on a screen, but the EDS will not accept the new version as a straight replacement for the old; it will insist on keeping both versions and giving them separate numbers, on the theory that mistakes must not be destroyed. We recommend that the same theory should apply in the Monitoring Service.

However, in all systems such as this, there are a number of documents — various lists and schedules — which remain in the same basic format for years and need only some of the internal information changed from time to time. So there should be an area of permanent store which would hold these items. This would be the one area of the System where users would be able to change material by simply replacing the old with the new.

The obvious candidates for this store would be the various bulletin and transmission schedules used in the Listening Room and RT Section. However, given sufficient store, it would be possible to include other material which needs occasional updating — right down to the staff list and local telephone list.

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COMMUNICATIONS FACILITIES

One of the important parts of the System would be the facilities it would offer users to send messages, both internally and externally, to interrogate the EDS at Bush House and to communicate with other parts of the BBC and with the outside world through the MSS or by commercial telex.

INTERNAL MESSAGES

Any VDU user in Caversham would be able to send messages to other users in Caversham. Messages would be sent to the recipient's printer, so that a permanent copy would exist. There would also be group codes so that any user would be able to send a message to a number of other people simultaneously. There would be a degree of privacy, since the System would send only what was on the originator's screen and would not store the message — no one else could retrieve it.

There would also need to be a separate command for sending material already in the System (known in EDS parlance as a Transfer Command). For example, if one user wished to send a multi-page item to another user (or even to get a copy on his own printer) it would be patently ridiculous to call it up, page by page, and send it. The "transfer" command would enable him to send the whole item with one simple command.

LINKS WITH THE REST OF THE BBC

1. The EDS

The methods of sending messages described above would apply also to any Caversham user who wanted to send a message to any user of the EDS, and vice versa.

Users of the Caversham System would also be able to call up material from any of the 30-odd categories in the EDS. Users of the EDS would be able to interrogate the Caversham System, but only processed material.

The System would also be used to transmit, via the EDS, material for programme services at Bush House (replacing the early morning bag).

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2. The MSS

All communications with parts of the BBC not on the EDS would be via the MSS. The System would be designed so that users could send messages to other BBC premises by using the standard BBC codes; the MSS would simply switch them through. The System would provide pro formas so that users would be able easily to put their messages in correct format for acceptance by the MSS.

LINKS OUTSIDE THE BBC

The majority of messages to destinations outside the BBC — special items for customers, the transmission of SWBs to those who want it in electronic form and the transmission of information to commercial data banks — would be made through the MSS. But there should also be a direct public telex facility in case of a breakdown in the MSS.

EXTERNAL LINES

We recommend the following:

Four two-way lines at 1200 baud between the Caversham System and the EDS. To be used for interrogation of each other's systems, the sending of messages and the transmission of SWBs and regular information to Bush House programme services.

These last two categories are likely to occupy a significant proportion of the traffic at peak times. Although all signals would normally go via any vacant line, we recommend that not more than two of these lines should be occupied by these categories at any one time.

One one-way line for sending News Bureau output to Bush House and any other regular user who is able to receive it at this speed (1200 baud).

One slow-speed line for B Wire customers who are unable to receive at 1200 baud.

Two two-way lines at 4800 baud for all traffic between Caversham and the MSS.

One public telex line to the Reading Exchange.

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EFFECT ON THE EDS

We are assuming that the new MSS will have sufficient capacity to handle the amount of material which we have described. As far as the EDS is concerned, at present it does not have the capacity to take on any additional functions.

Developments now being planned for the EDS may well provide sufficient capacity to handle the amount of material which we have suggested should go to it, but we do not know this for certain, and we are not even sure that all the expansion will be complete before the Monitoring Service System is in operation.

The links which we are proposing would necessitate some software changes in the EDS. More serious is the amount of storage capacity that would be needed if the "bag" material for Bush House were sent via the EDS and if there were a significant number of customers wanting SWBs electronically.

It is important that Bush House and Caversham should talk about these problems at an early date and exchange information about future plans.

COMMUNICATION WITH DATA BANKS

We have already said that we believe information should be sent to commercial data banks via the MSS. As for receiving information, our present view is that there should be no interrogation of data bank computers by VDUs on the Caversham System. It would be technically difficult to ensure that the System and its VDUs were compatible with numerous data banks. Users would have to learn how to communicate with other computers as well as Caversham's own and the EDS. Also, uncontrolled use might well incur heavy costs. At present, we believe that the Nexis terminal -- and presumably there will be one later for Reporter -- should remain under the control of the Library. This, however, is open to further investigation when there is more time.

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SERVICE OPERATOR/SUPERVISOR

A system such as we are proposing would need a Service Position with a Service Operator or Supervisor who would have a range of duties connected with the smooth running of the System. The Service Position should be placed as close as possible to the main operational areas, such as the News Bureau or Listening Room, and within easy reach of the processor room and engineers. These duties would be as follows:

System monitoring

A computer system needs to report on its status and condition and to show someone that it is operating correctly. The Service Operator would watch over the reports, check the levels of stores and taking corrective operational action to avoid potential trouble.

Faults

The Service Operator would be the central point to which users report faults in terminals and would give operational advice to solve apparent faults.

Messages

This position would be the central point for all kinds of messages. It would handle messages between, for instance, the EDS at Bush House and people at Caversham who did not have VDUs. It would deal with requests from customers, new and old, inside and outside the BBC. It would feed material out through the MSS and by public telex and be responsible for one-off or occasional communication with outside data banks and communications systems.

Training

A full training programme would be necessary for existing staff in the months before the System came on line. This would need to be a separate exercise. But continuing training would be necessary for new staff joining after the System was in use, and we think this could probably be undertaken by the Service Operator.

In the early stages, it would probably be enough to cover morning and evening shifts at the Service Position. But expansion might necessitate 24-hour coverage at a later date.

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STAFFING IMPLICATIONS

We can give only general impressions and broad estimates of the staff implications of an electronic system. Much will depend on policy decisions made as a result of our recommendations, and on the agreements that can eventually be made with the unions. However, the following thoughts are offered:

Filing Room

Under our proposals, the paper-producing side of the Filing Room's present work would no longer be necessary. Tape filing would remain. A rough estimate would be that Filing Room posts could be cut by 60%.

Listening Room clerical pool

We have not had time to study all the work of the dictation typists. This is open for further investigation later. However, it would no longer be necessary for a typist to compile, for instance, Tass English headlines; the System could do it automatically.

RT Section

We do not see any staff reductions here. We believe the same number of clerks would be needed to work the VDUs as currently look after the teleprinter output.

News Bureau

The senior clerk/teleprinter operators and clerk/teleprinter Operators divide their time between teleprinting and a range of general duties which includes clearing the teleprinters, delivering material by hand or by Lamson tubes and keeping up numerous files. In our view, there would still be a need for an attendant to clear the System printers, but no delivery and little filing. The number of posts in this area might be reduced by 50% — more if the journalists put material directly on to the wires.

Printing

Since the preparation of material for offset printing would be easier and quicker than now, there would be fewer VDUs than there are IBM typewriters at present, therefore fewer input typists. Our rough estimate is for a reduction of about 25%, perhaps more.

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Engineering

If our proposals for letting the System control receivers were adopted, it would presumably lead to a reduction in operations assistants' posts at Crowsley Park -- perhaps one on a shift instead of two.

It must be remembered that any system would need a number of skilled engineers to look after it. This is something for Monitoring Service to decide. As an illustration, the EDS at Bush House, which is of roughly comparable size to the system we are proposing for Caversham, has a manager and about 12 engineers. The system started with six engineers, but the number had to be increased because of pressure of work and continuing programme developments. The EDS also has nine supervisors, who combine the duties of Service Position and general supervisory duties, such as system monitoring and acting as a fault-reporting centre.

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FINALLY....

The Caversham System has so far been referred to as the MDS.

But is is fashionable (and to use the current terminology, more "user-friendly") to have a popular name for a system.

HMS has said that he would like the System to be called MONDIAL. Unfortunately, this name has already been adopted by British Telecom for its headquarters and main switching centre, Mondial House. This name is becoming internationally recognised as a British Telecom identification, and they can be expected to use it more and more.

So we suggest that the Caversham System might be known simply as:

MONITOR

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APPENDIX A

STATISTICS OF INFORMATION FLOW

A "census" of information flows was taken on Wednesday, January 20th, 1982, which was regarded as an "average" day in terms of news.

The various types of material were examined to obtain an idea of the amount of information that any system would have to handle and store. An allowance would need to made during the detailed design of a system to cope with periods of higher activity and to allow for future expansion.

The following table summarises the statistics:

Type of material	Number of items	Number of pages	Number of characters
Unprocessed material			
(a) Monitors' transcripts	350	551	660K
(b) RT English language			
From RT Section	541	485	728K
From Tass English	145	150	225K
	686	635	953K
(c) FBIS (input to BBC)	411	756	1,306K
TOTAL	1,447	1,942	2,920K
Processed material			
(a) News A Wire			5K
(b) News B Wire			100K
(c) SWB printed pages			600K
TOTAL			705K

It will be noted that, in terms of volume, the News Bureau's output represents about 3% of the unprocessed material. The corresponding figure for SWBs is about 20%.

The design of the System will also be dependent on the rate at which the material arrives. Fig. 1(a) shows the total number of AF bulletins monitored during each hour. Apart from the peak between 1200 and 1300 GMT, the number of bulletins increases steadily throughout the day and reaches its maximum between 1500 and 2200 GMT. It is clear from Fig. 1(a) that the evening is the peak period in the Listening Room.

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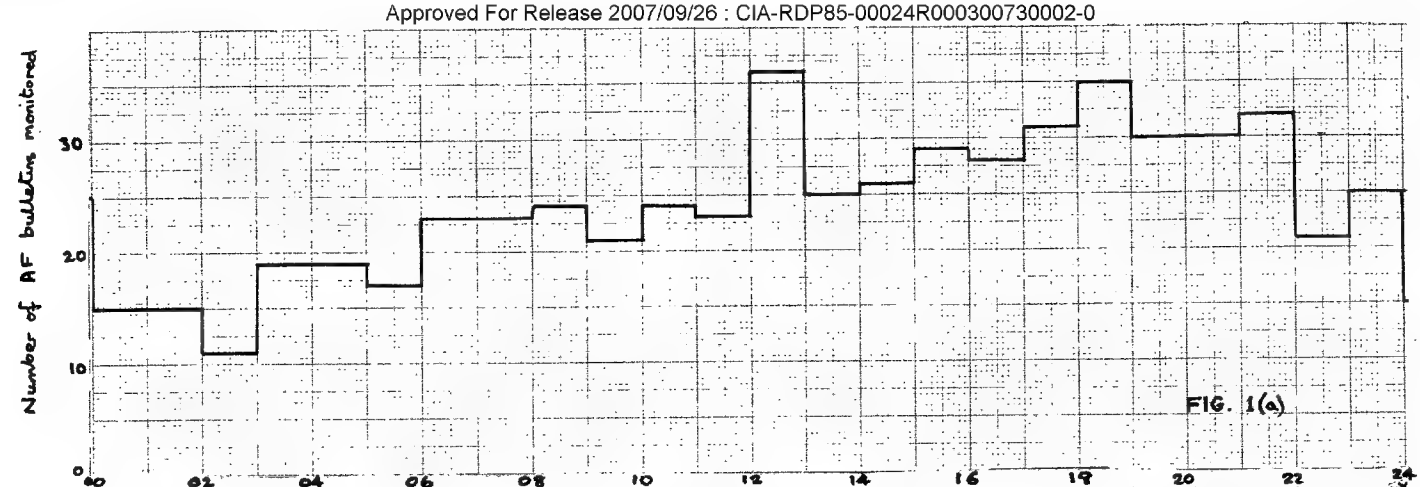

FIG. 1(a)

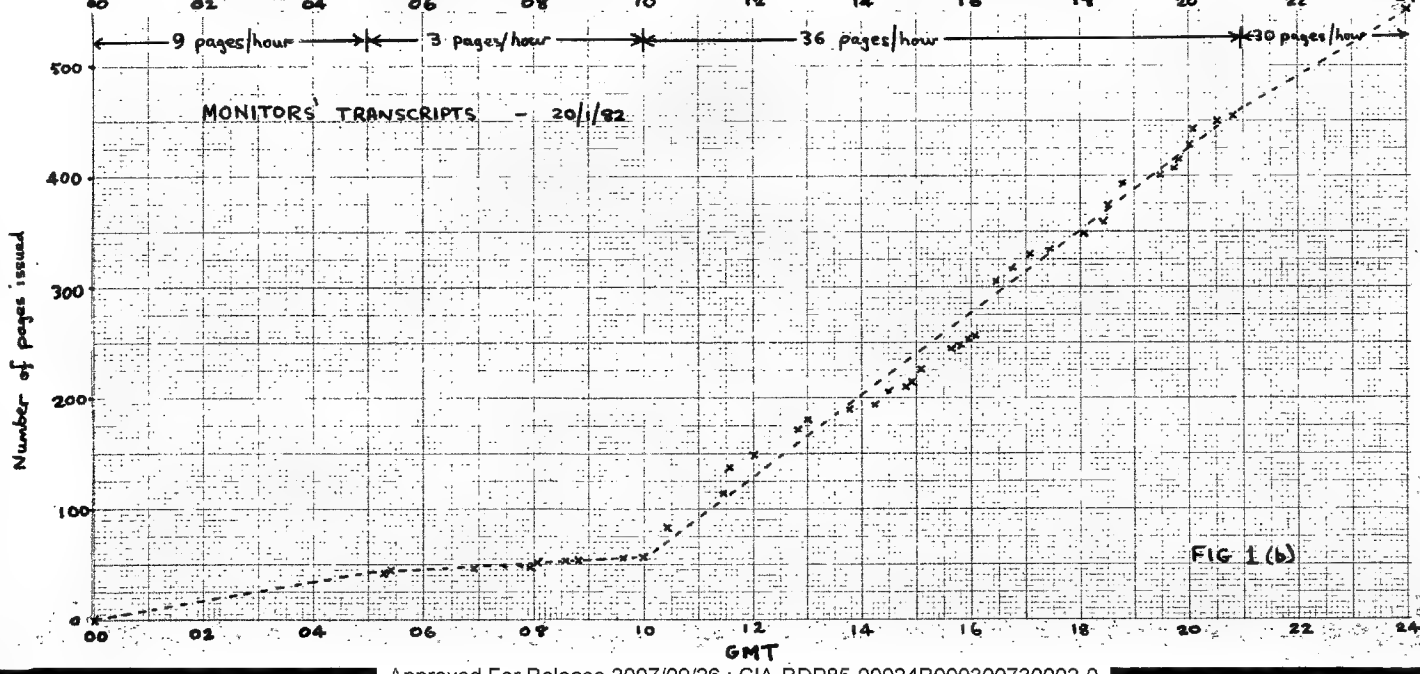

FIG 1(b)

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It is important, however, to examine the actual rates at which pages of monitors' transcripts are issued. Fig. 1(b) shows the cumulative totals of pages issued throughout the day. The dotted line shows a sensible approximation to the data. The peak period is between 1000 and 2100 GMT, when pages are issued at the remarkably steady rate of 36 per hour.

The apparent conflict between Figs. 1(a) and 1(b) can be resolved by taking into account the number of transcripts of material which was recorded earlier. The monitors transcribe recorded material in the clear periods when they are not required to monitor live transmissions.

A similar analysis of the data flow has been made for the English-language output of the RT Section. Fig. 2(a) shows the number of RT transmissions being received during each 15-minute period of the day. Fig. 2(b) shows the number of RT items issued per hour. About 85% of the RT messages are received between 0800 and 1800 GMT.

So far there has not been time to make a similar study of FBIS material.

The figures for the number of characters per hour which a computer system would be required to handle are summarised below:

	Pages per hour	Characters per page	Characters per hour
Monitors' transcripts	36	1200	43K
RT: English from RT Section	60	1500	90K
Tass English	14	1500	21K
FBIS		(estimated)	135K
TOTAL			289K

This total flow is relatively slow. Perhaps the simplest way to illustrate this is to say that, even if the entire volume of the unprocessed material were routed to any particular section on just one 1200 baud printer, that printer would be idle for about 50% of the time. This, of course, would not be satisfactory because there would be unacceptable delays when several items arrived in the System simultaneously at peak periods. Therefore, in most areas which would receive automatic prints of unprocessed material, we have specified more than one printer.

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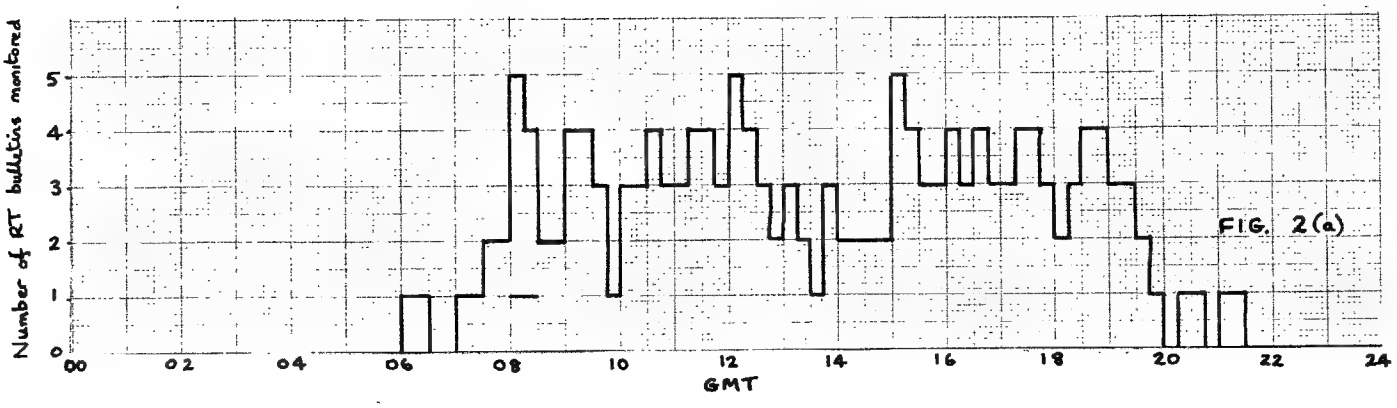

FIG. 2(a)

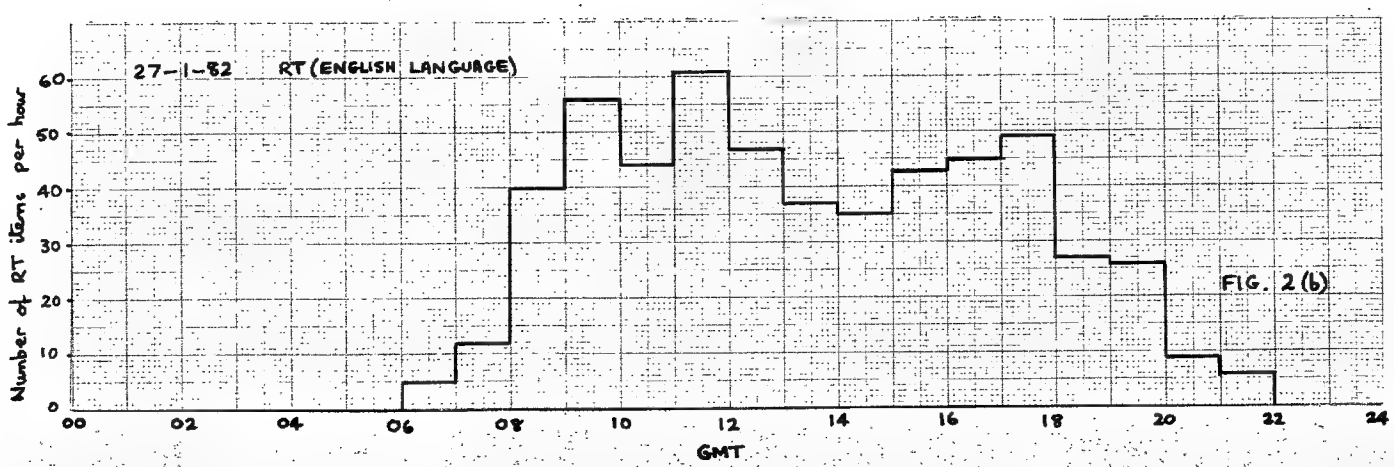

FIG. 2(b)

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APPENDIX B

TERMINAL EQUIPMENT

The list which follows is in no way intended to be definitive. It is no more than a rough guide, given mainly so that some kind of overall system cost can be estimated.

Final recommendations on the number and type of terminals in each section will come at a later stage, after much more detailed discussion of working methods.

	VDUs	1200 baud Printers
Listening Room and cubicles	60	20
RT Section	5	1
News Bureau	8	5
Editorial sections	24	8
FBIS	16	4
Printing area	6	3 special printers
Library	3	1
Management/training	10	4
Engineering	4	2
	136	45 + 3 special

NOTE: These figures do not include maintenance spares or the slower-speed printers necessary for the System to produce its own reports and journals and for control of the System.

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APPENDIX C

COMPUTER SYSTEM SPECIFICATION

Channels

	INPUT CHANNELS		OUTPUT CHANNELS	
	Number	Data rate (baud)	Number	Data rate (baud)
VDUs	136	9600	136	9600
Printers			45	1200
FBIS (AUTODIN)	1	600	1	600
EDS	4	1200	4	1200
A/B Wire			1	1200
" "			1	50-300
Telex	1	50	1	50
MSS	2	4800	2	4800
News agencies (RT, Tass, Reuter)	15	50-200		

Ports

9600 baud - 64 input, 64 output

Response time

Less than 2 seconds

Reliability

We would naturally expect the System to be a dual one. We also recommend consideration of having a third processor so that future reprogramming for expansion and new facilities can be carried out off-line.

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APPENDIX D

STORAGE IN THE SYSTEM

The computer's memory will need to contain several classes of store, depending on the requirements of individual sections and on which terminals are allowed access to the material.

STORE A

Edited material which has been processed by SWB or the News Bureau. Accessible from all VDUs in Caversham, including FBIS, and from VDUs on the EDS at Bush House.

STORE B

Raw material (monitors' transcripts, RT and FBIS). Accessible only within Caversham, including FBIS. It would be possible to transmit this material to EDS users or outside customers, but only by Monitoring Service initiative.

STORE C1

A holding store for monitors' multi-page items and material from monitors under training. Accessible only by the Listening Room. Finished material transfers to Store B.

STORE C2

A holding store for RT material before it is processed by the RT Section for general distribution. After processing, it goes into Store B and is wiped out of Store C2. Accessible only by the RT Section while being processed, but incoming material available to VDUs in Caversham by use of the "tuning in" facility.

STORE C3

A holding store for processed News Bureau material awaiting the Duty Editor's approval or transmission by operators. When transmitted, it goes into Store A and clears from the holding store. Holding store accessible only by News Bureau and operators.

STORE C4

A holding store for typed SWB material awaiting editorial approval and/or proofreading. Accessible only by editorial sections and input typists. Finished material transfers to Store A.

STORE C5

This becomes necessary if FBIS comes fully into the System. It

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would be a holding store for material processed by FBIS awaiting transmission on their wire. Accessible only to FBIS.

PERMANENT STORE

All the material in Stores A-C5 has a finite life. There would also need to be an area of permanent store for those schedules and other items which are constantly needed in standard formats but with details changed.

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DATA STORAGE REQUIREMENTS

	Daily volume (characters)	Storage time (days)	Storage required (characters)	
Processed material				
Telex A	5K	7	0.03M	
Telex B	100K	7	0.7M	
SWB	600K	12	7.2M	
FBIS (output to Washington)	400K (est.)	14	5.6M	
	1,105K		13.5M	
Unprocessed material				
Monitors' transcripts	660K	14	9.2M	
RT English	953K	14	13.3M	
FBIS	1,306K	14	18.2M	
	2,910K		40.7M	
Lists/Indexes				
Telexes A & B	10K	7	0.07M	
SWB (key word index)	75K (p.wk)	3 yrs	11.7M	
FBIS (output to Washington)	20K	14	0.28M	
Monitors' transcripts	35K	14	0.5M	
RT English	103K	14	1.4M	
FBIS	41K	14	0.6M	
			14.6M	
Temporary storage				
Monitors' transcripts (C1)			0.5M	
RT (C2)			0.1M	
News Bureau (C3)			0.1M	
SWB (C4)			1.0M	
FBIS (C5)			0.8M	
			2.5M	
		TOTAL		71.3M

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APPENDIX E

AUTOMATIC AND SEMI-AUTOMATIC PRINTING

The following is a list of recommended automatic printouts (programmed into the System) and semi-automatic printouts (specified by the originators)

Monitors' transcripts

- News Bureau
- FBIS
- Listening Room Supervisor
- Monitor
- SWB editorial sections (as specified by the monitor)
- Other monitoring teams (as specified by the monitor)
- *Bush House language sections (as requested)

RT - English language

- News Bureau
- FBIS
- Listening Room Supervisor
- SWB editorial sections (determined by agency)
- Monitoring teams (determined by agency)
- *Bush House language sections (determined by agency)

FBIS

- News Bureau
- Listening Room Supervisor
- SWB editorial sections (determined by place of origination)

Reuter

- News Bureau
- FBIS

Lilongwe and Nairobi

- News Bureau
- FBIS
- SWB Part 4
- *African Service, Bush House

News Bureau output

- FBIS
- SWB - all sections
- Listening Room Supervisor
- BBC Newsrooms
- All existing customers

SWB completed pages

- SWB originating section
- Printing area

Some people in the Listening Room have already said that they would not want printouts of Reuter, for instance, if they could call it up on VDU screens. The same may well apply to News Bureau output, which some sections may prefer to have on demand rather than by automatic printout.

* There may have to be built-in delays for the sending of this material. This will need further discussion.

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BULK OR COLLATED DELIVERY IN AUTOMATIC PRINTING

The current methods of distribution recognise that certain areas have different operational requirements. For example, the RT Section sends individual pages, as soon as possible, to the News Bureau and FBIS, but sends entire bulletins or transmissions to other areas. The latter is often more convenient for some users, despite the inherent delays.

The System would provide similar options. For example, the SWB editorial sections might prefer to receive items in chronological order during the day but have them in batches of related material at night, when the delay in delivery would be irrelevant. Also, language sections at Bush House might prefer to have all material from one source together.

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APPENDIX F

FBIS TECHNICAL FACTS

Communication between the FBIS bureau at Caversham and other FBIS stations is through the U.S. Department of Defense AUTODIN system. This is basically an ADX system with a number of store-and-forward exchanges throughout the world.

The signals use an 8-bit code on transmission, but when they reach Caversham and other stations they are converted into standard 5-bit teleprinter code and reproduced by 600 baud printers. The remaining three bits are presumably used for error detection and correction.

FBIS require the system to handle upper- and lower-case characters for internal use in Washington. To allow a restricted five-unit code to send capitals, the blank character (00000) is used to indicate capital letters. A single blank indicates that the next character will be upper case; two consecutive blanks indicate that the next word will be in upper case. The end of the word is defined by the next space.

An electronic system within Caversham must accept inputs from FBIS in the above format. If the FBIS bureau is equipped with editing facilities on the Caversham System, an output port compatible with AUTODIN must be provided.

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APPENDIX B: COMPUTER SYSTEM DETAILS

RATE AT WHICH MATERIAL ARRIVES

Fig 1(a) shows the total number of AF bulletins monitored during each hour. Apart from the peak between 1200 and 1300 GMT, the number of bulletins increases steadily throughout the day and reaches its maximum between 1500 and 2200 GMT. It is clear from Fig 1(a) that the evening is the peak period in the Listening Room.

Rates at Which Pages of Monitors' Transcripts are Issued

Fig 1(b) shows the cumulative totals of pages issued throughout the day. The dotted line shows a sensible approximation to the data. The peak period is between 1000 and 2100 GMT, when pages are issued at the remarkably steady rate of 36 per hour.

The apparent conflict between Figs 1(a) and 1(b) can be resolved by taking into account the number of transcripts of material which was recorded earlier. The monitors transcribe recorded material in the clear periods when they are not required to monitor live transmissions.

A similar analysis of the data flow has been made for the English-language output of the RT Section. Fig 2(a) shows the number of RT transmissions being received during each 15-minute period fo the day. Fig 2(b) shows the number of RT items issued per hour. About 85% of the RT messages are received between 0800 and 1800 GMT.

The figures for the number of characters per hour which the computer system would be required to handle are summarised below. Once again the figures are double those shown for an average day.

	Pages Per hour	Characters per page	Characters per hour
Monitors' transcripts	70	1200	84K
RT: English from RT Section	120	1500	180K
Tass English	30	1500	45K
FBIS	(estimated)		270k
			579K

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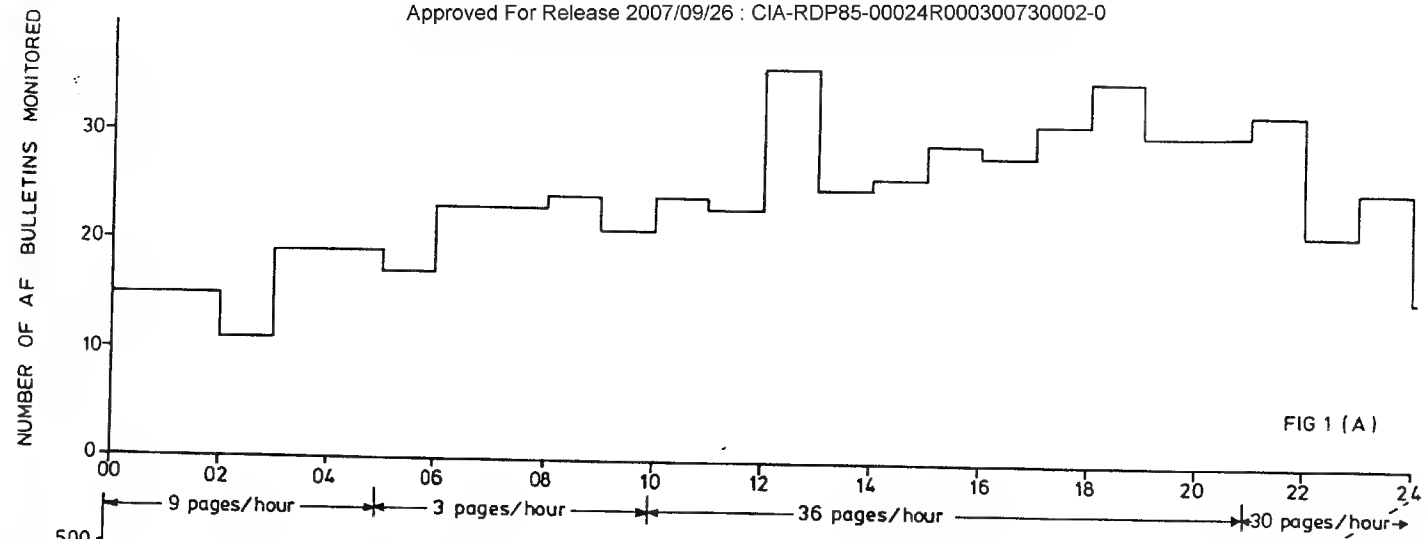

FIG 1 (A)

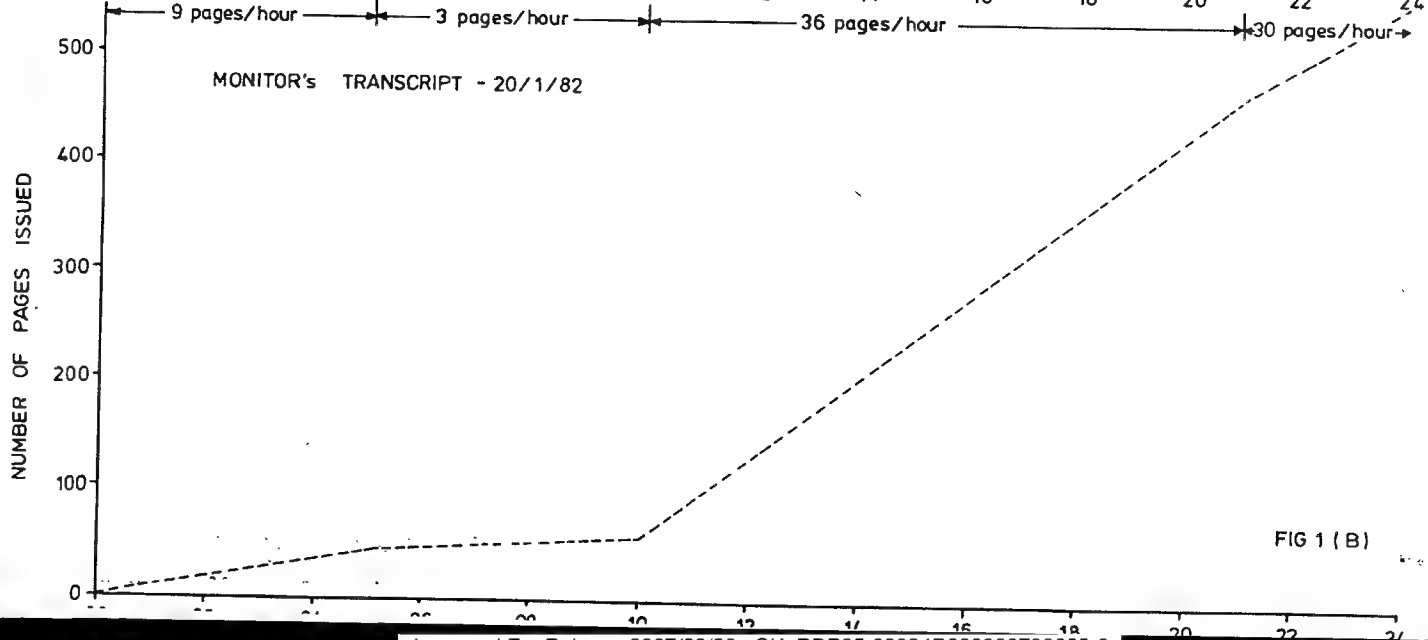

FIG 1 (B)

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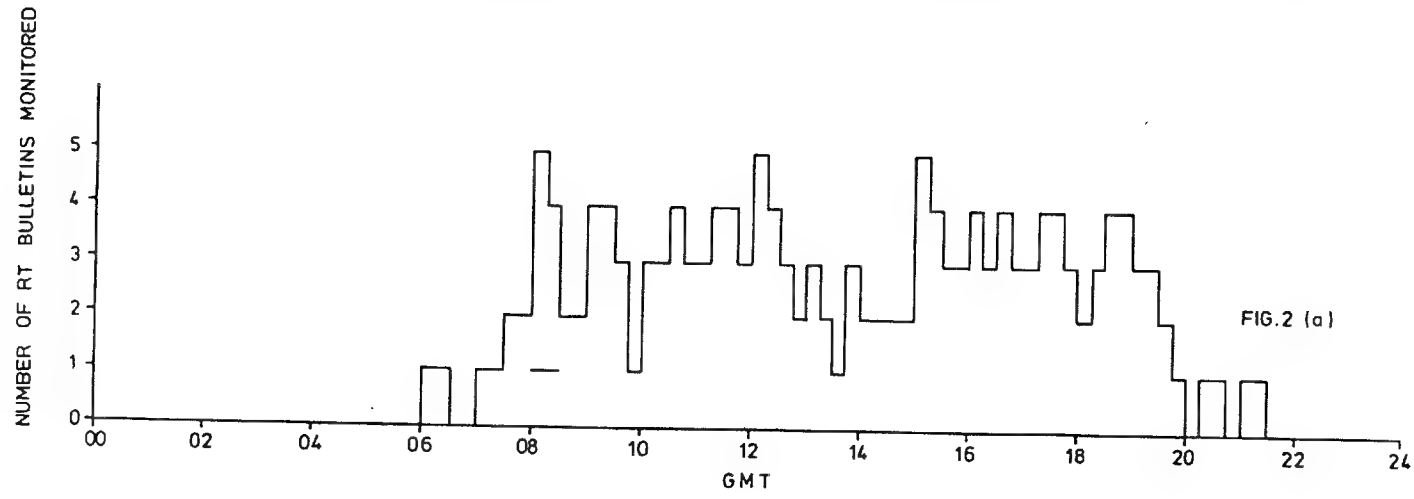

FIG.2 (a)

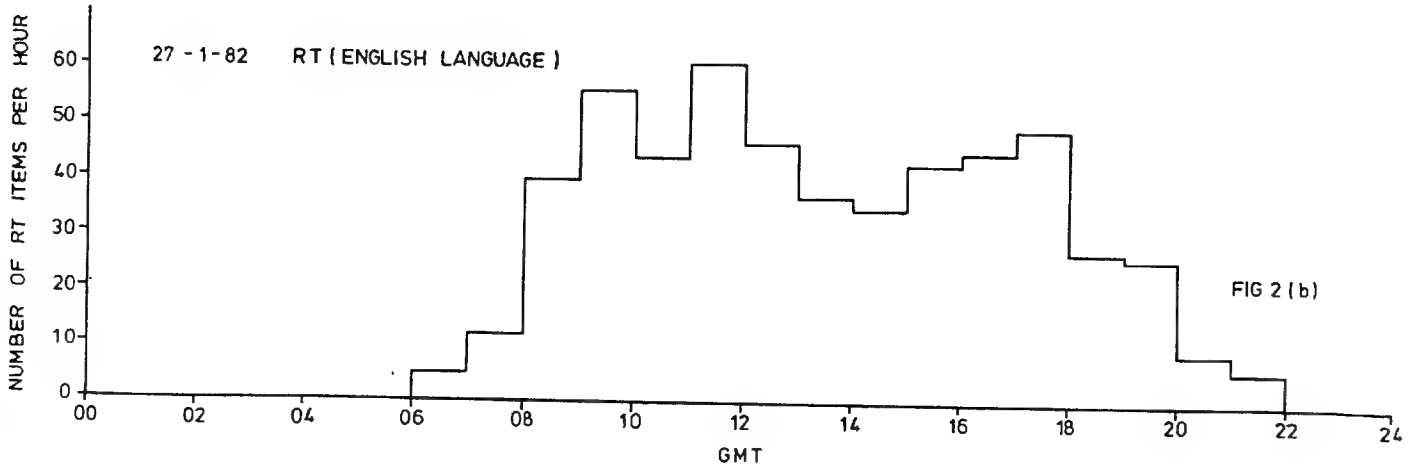

FIG 2 (b)

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TERMINAL EQUIPMENT

The list which follows is in no way intended to be definitive. It is no more than a rough guide, given mainly so that some kind of overall system cost could be estimated.

	VDUs	1200 baud Printers
Listening Room	70	20
R T Section	5	1
News Bureau	10	5
Editorial sections	25	8
FBIS	-	2
Printing area	6	3 high quality printers
Library	5	1
Management/training	10	4
Engineering	5	2
Spares	14	5
	150	48 + 3 special

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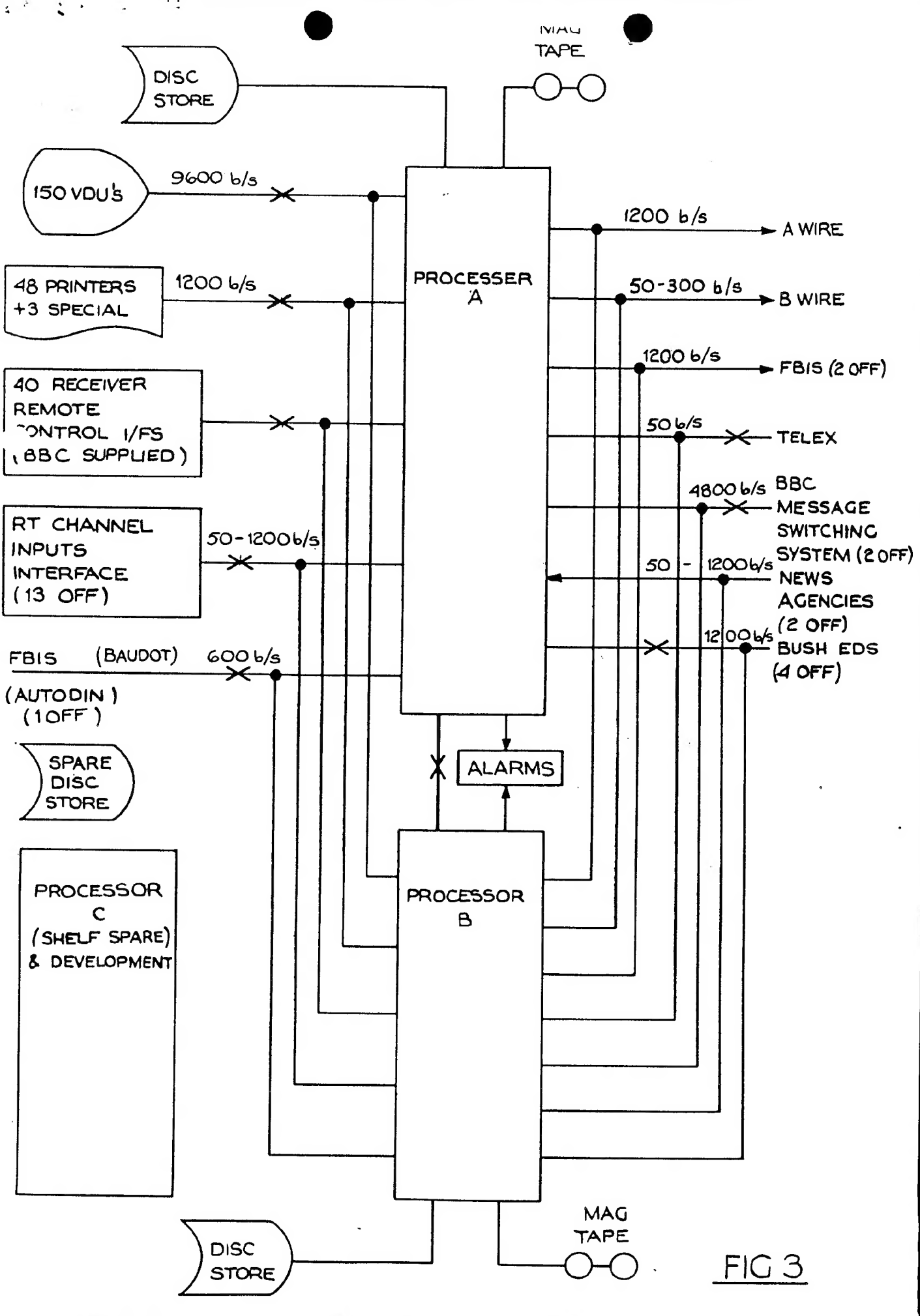

FIG 3

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COMPUTER SYSTEM SPECIFICATION

Channels

	INPUT CHANNELS		OUTPUT CHANNELS	
	Number	Date rate (bits/sec)	Number	Data rate (bits/sec)
VDUs	150	9600	150	9600
Printers (RO)			48	1200
" (special)			3	As required
FBIS (AUTODIN)	1	600	2	1200
EDS, Bush House	4	1200	4	1200
A/B Wire			1	1200
" "			1	50-300
Telex	1	50	1	50
MSS (BBC System)	2	4800	2	4800
News agencies (Tass, Reuter)	2	50-200		
Inputs from RT receivers	13	50-200		
Remote control receiver tuning (AF)	40		40	
" " " " (RT)	13		13	

CONCURENCY

Assume that 64 input and 64 output channels at 9600 b/s could be in use simultaneously.

Response Time

Less than 2 seconds.

Basic Hardware Configuration

See sketch (fig 3).

Reliability

Dual systems are envisaged with a 3rd processor and disc as shelf spares and for development. Processor C would be able to take over from A at any instant in the event of malfunction or a maintenance requirement. The memories would be non-volatile.

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DATA STORAGE REQUIREMENTS

	Daily volume (characters)	Storage time (days)	Storage required (characters)
Processed material			
Telex A	10K	7	0.06M
Telex B	200K	7	1.4M
SWB	1200K	12	14.4M
FBIS (output to Washington)	800K (est)	14	11.2M
	2210K		27M
Unprocessed material			
Monitors' transcripts	1300K	14	18.2M
RT English	1900K	14	26.6M
FBIS	2600K	14	36.4M
	5800K		81M
Lists/Indexes			
Telexes A & B	20K	7	14M
SWB (key work index)	150K (p/w)	3 years	23.4M
FBIS (output to Washington)	40K	14	0.6M
Monitors' transcripts	70K	14	1.0M
RT English	206K	14	2.8M
FBIS	82K	14	1.2M
			30M
Temporary storage			
Monitors' transcripts			1.0M
RT			0.2M
News Bureau			0.2M
SWB			2.0M
FBIS			1.6M
			5M
		TOTAL	144M

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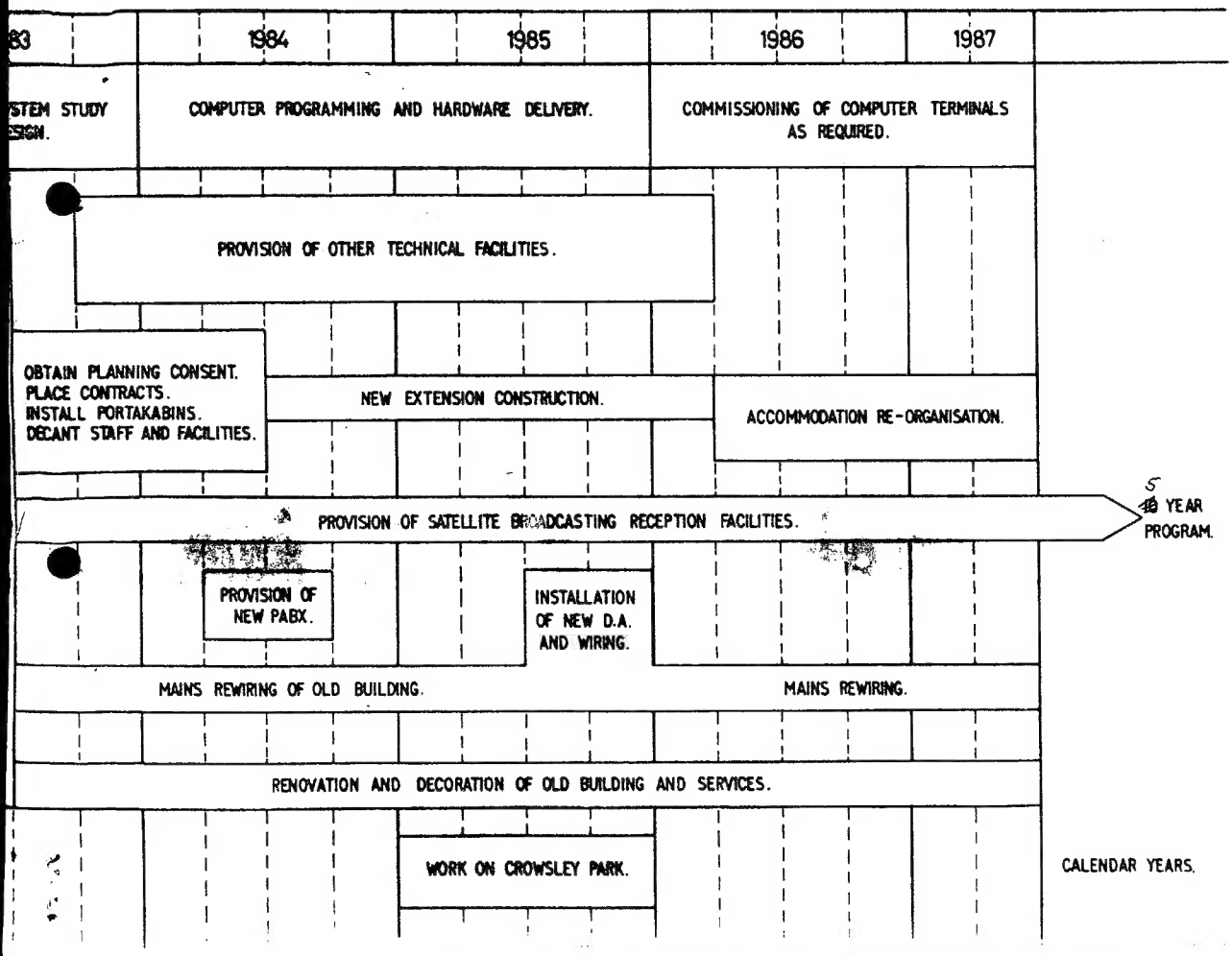
CAVERSHAM MODERNISATION PROPOSED TIMETABLE.



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